

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-16 are pending in the application, with claims 1, 9, and 15 being the independent claims. Claim 17 is sought to be cancelled without prejudice to or disclaimer of the subject matter therein. Claims 1, 2 and 15 are sought to be amended. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Claim Objections

The Examiner has objected to claims 1 and 9 due to the use of the term "the steps" in the preamble of each of those claims. In particular, the Examiner has asserted that "the steps" lacks antecedent basis. Applicants note that claims 1 and 9 are method claims. As such, the preamble of each of these claims recites "[a] method . . . comprising the steps of," in accordance with a format traditionally used for method claims, wherein "the steps" being referred to are *those set forth in the body of the claim*. Thus, the term "the steps," as recited in the preamble of each of claims 1 and 9, does not lack antecedent basis. Accordingly, Applicants respectfully request that the objection to claims 1 and 9 be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 103

The Examiner has rejected claims 1-8 and 15-17 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,438,123 to Chapman ("Chapman") in view of U.S. Patent No. 5,978,022 to Geiger ("Geiger"). For the reasons set forth below, Applicants respectfully traverse.

Claim 1 as currently amended is directed to a method for dynamically mixing header suppression techniques for transmitting data over a Data Over Cable Service Interface Specification (DOCSIS) network. The method includes the steps of:

- (a) communicating a plurality of header suppression techniques and a unique index number assigned to each of the plurality of header suppression techniques to a cable modem termination system;
- (b) receiving a plurality of data packets to be transmitted;
- (c) identifying which of the received data packets have a header that should be suppressed;
- (d) selecting a header suppression technique from the plurality of header suppression techniques for each of the identified data packets;
- (e) appending a packet header element to each of the identified data packets, the packet header element containing the index number assigned to the header suppression technique selected for each of the identified data packets; and
- (f) suppressing a header of each of the identified data packets using the header suppression technique selected for each of the identified data packets; and
- (g) concatenating each data packet within a single DOCSIS transmit burst to form a mixed protocol burst.

Chapman does not teach or suggest each of the foregoing features of claim 1. For example, Chapman does not teach or suggest "concatenating each data packet within a single DOCSIS transmit burst to form a mixed protocol burst" as recited in claim 1.

Chapman teaches the use of only a single header suppression technique: suppression of Ethernet, UDP and IP headers in a flow of RTP packets corresponding to a Voice over Internet Protocol (VoIP) phone call. *See* Chapman, col. 4, ll. 29-44. As such, Chapman cannot "form a mixed protocol burst," since any burst generated in accordance with the teachings of Chapman can only include packets that are suppressed using the single form of header suppression taught by Chapman.

In fact, Chapman is representative of prior art DOCSIS technology that permits only a single type of header suppression (i.e., DOCSIS Payload Header Suppression) to be used. As set forth in the specification of the present application:

As previously discussed, the DOCSIS protocol enables concatenation of data packets but, it does not allow the mixing of different header suppression techniques within a single DOCSIS transmit burst or SID. However, because the index number contained in the packet header element appended in step 710 provides a means for separating the packets, ***the mixing of different header suppression techniques within a SID is now possible.*** Accordingly, in an alternative embodiment, ***a mixed protocol SID is produced*** in step 714.

See Specification at paragraph [0110] (emphasis added).

Geiger does not provide this missing teaching. Geiger discloses a transmitter in a generic data communication system that selectively applies one of three header compression techniques to a packet to be transmitted depending on a packet type identifier and a protocol identifier included in the packet. However, Geiger is silent as to how such a technique could be implemented in a DOCSIS network and, as such, also does not teach or suggest "concatenating each data packet within a single DOCSIS transmit burst to form a mixed protocol burst" as recited in claim 1.

Moreover, persons skilled in the art would not be motivated to combine the teachings of Chapman and Geiger, since conventional DOCSIS technology as

represented by Chapman does not provide a mechanism for using multiple alternative header suppression techniques and because the use of such techniques would raise undesired interoperability issues. As set forth in the background section of the present application:

Heretofore, the use of proprietary data transfer protocols that extend beyond those provided by the DOCSIS specification have been avoided. This is due, in part, to the fact that the DOCSIS specification does not provide a mechanism for using alternative protocols in a cable modem system. For example, the DOCSIS specification does not provide a mechanism for the use of data packet formats other than those it provides. Moreover, because conventional CMTS and cable modem devices have been designed in accordance with the DOCSIS specification, the use of extended protocols has been avoided to ensure interoperability between individual cable modem system components. For example, conventional DOCSIS-compliant CMTS equipment is incapable of differentiating between standard DOCSIS traffic and traffic transmitted in accordance with an extended protocol.

See Specification at paragraph [0017].

Since neither Chapman nor Geiger, alone or in combination, teach or suggest each and every feature of independent claim 1, the combination of Chapman and Geiger fails to support a *prima facie* obviousness rejection of that claim. Accordingly, the Examiner's rejections of claim 1 under 35 U.S.C. § 103(a) is traversed and Applicants respectfully request that the rejections be reconsidered and withdrawn. Dependent claims 2-8 are also not rendered obvious by this combination for at least the same reasons as independent claim 1 from which they depend and further in view of their own respective features. Accordingly, the Examiner's rejections of claims 2-8 under 35 U.S.C. § 103(a) are likewise traversed and Applicants respectfully request that these rejections be reconsidered and withdrawn.

Claim 15 as currently amended is directed to a system for dynamically mixing header suppression techniques transmitted over a DOCSIS network. The system includes:

one or more cable modems that suppress data packet headers by selectively using one of a plurality of header suppression techniques wherein said one or more cable modems concatenates each data packet having a suppressed header into a single DOCSIS transmit burst to form a mixed protocol burst; and

a cable modem termination system (CMTS) enabled to expand said data packet.

As noted above in regard to claim 1, neither Chapman nor Geiger teaches or suggests a cable modem that suppresses data packet headers "by selectively using one of a plurality of header suppression techniques" and "concatenates each data packet having a suppressed header into a single DOCSIS transmit burst to form a mixed protocol burst" as recited by claim 15. Moreover, as noted above in regard to claim 1, one skilled in the art would not be motivated to combine the teachings of Chapman and Geiger since conventional DOCSIS technology as represented by Chapman does not provide a mechanism for using multiple alternative header suppression techniques and because the use of such techniques would raise undesired interoperability issues.

Since neither Chapman nor Geiger, alone or in combination, teach or suggest each and every feature of independent claim 15, the combination of Chapman and Geiger fails to support a prima facie obviousness rejection of that claim. Accordingly, the Examiner's rejections of claim 15 under 35 U.S.C. § 103(a) is traversed and Applicants respectfully request that the rejections be reconsidered and withdrawn. Dependent claim 16 is also not rendered obvious by this combination for at least the same reasons as independent claim 15 from which it depends and further in view of its own respective

features. Claim 17 has been canceled without prejudice to or disclaimer of the subject matter recited therein, thereby rendering the rejection of this claim moot. Accordingly, the Examiner's rejections of claims 15-17 under 35 U.S.C. § 103(a) are likewise traversed and Applicants respectfully request that these rejections be reconsidered and withdrawn.

The Examiner has rejected claims 9-14 under 35 U.S.C. § 103(a) as being unpatentable over Chapman in view of Geiger and in further view of U.S. Patent No. 6,542,504 to Mahler *et al.* ("Mahler"). For the reasons set forth below, Applicants respectfully traverse.

Claim 9 is directed to a method for expanding data packet headers transmitted over a DOCSIS network. The method includes the steps of:

- (a) receiving a mixed protocol burst comprising a plurality of data packets having headers suppressed in accordance with a corresponding plurality of header suppression techniques;
- (b) identifying each data packet within the mixed protocol burst that has a suppressed header;
- (c) searching a lookup table to select a set of rules from a plurality of sets of rules for expanding a suppressed header of each of the data packets identified in step (b); and
- (d) expanding a suppressed header of each of the data packets identified in step (b) according to a set of rules selected in step (c).

Alone or in combination, Chapman, Geiger and Mahler do not teach or suggest each of the foregoing steps. In particular, none of the cited references teaches or suggests "receiving a mixed protocol burst comprising a plurality of data packets having headers suppressed in accordance with a corresponding plurality of header suppression techniques." As noted above in regard to claims 1 and 8, neither Chapman nor Geiger teaches or suggests the transmission of "a mixed protocol burst" in a DOCSIS network.

Mahler does not provide the missing teaching. This is because Mahler, like Chapman, teaches only a single suppression technique: the identification and suppression of fields that are "often or always the same" in IP/UDP/RTP packet headers. *See* Mahler, col. 5, ll. 50-60.

Since Chapman, Geiger and Mahler, alone or in combination, fail to teach or suggest each and every feature of independent claim 9, the combination of Chapman, Geiger and Mahler fails to support a *prima facie* obviousness rejection of that claim. Accordingly, the Examiner's rejections of claim 9 under 35 U.S.C. § 103(a) is traversed and Applicants respectfully request that the rejections be reconsidered and withdrawn. Dependent claims 10-14 are also not rendered obvious by this combination for at least the same reasons as independent claim 9 from which they depend and further in view of their own respective features. Accordingly, the Examiner's rejections of claims 9-14 under 35 U.S.C. § 103(a) are likewise traversed and Applicants respectfully request that these rejections be reconsidered and withdrawn.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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